

CLAIMS

1. A method for producing information carriers, comprising the steps of transporting the information carriers by at least one transporting device; processing a surface of the information carriers by a processing unit; and treating the information carriers on the surface so that the surface is well wetted for further printing with ink.

2. A method as defined in claim 1; and further comprising performing the treating so that wettability with ink is increased and a later produced printed image is improved.

3. A method as defined in claim 1; and further comprising performing the treating so that a surface energy of the surface of the information carriers is increased.

4. A method as defined in claim 3; and further comprising increasing the surface energy so that it is greater than a surface tension of the ink for printing.

5. A method as defined in claim 1; and further comprising oxidizing the surface of the information carriers by the treating.

6. A method as defined in claim 1; and further comprising subjecting the surface of the information carriers to an ionization.

7. A method as defined in claim 1; and further comprising subjecting the surface of the information carriers to a corona treatment.

8. A method as defined in claim 1; and further comprising
subjecting the surface of the information carriers to a thermal treatment.

9. A method as defined in claim 8; and further comprising
performing the thermal treatment by an open flame.

10. A method as defined in claim 8; and further comprising
performing the thermal treatment by a gas flame.

11. A method as defined in claim 1; and further comprising
subjecting the surface of the information carriers to a plasma treatment.

12. A method as defined in claim 1; and further comprising performing the treatment of the surface of the information carriers as a treatment stage on a transporting path.

13. A method as defined in claim 1; and further comprising advancing the information carriers on their transporting path to at least one processing unit which performs the treatment.

14. A method for producing information carriers, comprising the steps of forwarding the information carriers by at least one transporting device; moving the information carriers to at least one processing unit for processing on a surface of the information carriers; and printing the information carriers on the surface with ink.

15. A method as defined in claim 14; and further comprising performing the printing with ink in accordance with a DoD process.

16. A method as defined in claim 14; and further comprising performing the printing with such an ink which is substantially free of solvents.

17. A method as defined in claim 14; and further comprising performing the printing with such an ink which is substantially free of volatile solvents.

18. A method as defined in claim 14; and further comprising performing the printing with such an ink which is hardened by polymerization.

19. A method as defined in claim 14; and further comprising performing the printing with such an ink which is dried or hardened by an action selected from a group consisting of UV radiation, electron radiation, and thermal action.

20. A method as defined in claim 14; and further comprising performing the printing of the surface of the information carriers as a further processing stage on a transporting path.

21. A method as defined in claim 14; and further comprising advancing the information carriers on their transporting path to at least one processing unit which performs printing.

22. A method as defined in claim 21; and further comprising providing the at least one processing unit for printing with at least one printing head.

23. A method as defined in claim 22; and further comprising using a DoD printing head as said at least one printing head.

24. A method as defined in claim 1; and further comprising further treatment stages which serve for treatment of the surface of the information carriers and follow a treatment stage for printing along a transporting path of the information carriers.

25. A method as defined in claim 14; and further comprising further treatment stages which serve for treatment of the surface of the

information carriers and follow a treatment stage for printing along a transporting path of the information carriers.

26. A method of producing information carriers, comprising the steps of forwarding information carrier by at least one transporting device; moving the information carriers to a processing unit for processing on a surface of the information carriers; guiding the information carriers along at least one-sided guide in a longitudinal groove; and moving along with the transporting device drivers which abut against and drive the information carriers at a distance above a transporting element selected from the group consisting of a band and a chain.

27. A method of producing information carriers, comprising the steps of forwarding the information carriers by a transporting device; moving the information carriers to at least one processing unit for printing on a surface of the information carriers; transferring the information carriers in a course of a forward movement and for passing the processing unit for

printing to a further transporting device associated with the processing unit, and after passing through the processing unit transferring the information carriers from the further transporting device again to the transporting device.

28. A method as defined in claim 27; and further comprising selecting a transporting speed of the information carriers movable by the further transporting device greater than a transporting speed of the information carriers movable by the transporting device.

29. A method as defined in claim 28; and further comprising selecting the transporting speed of the information carriers movable by the further transporting device substantially 5% greater than that of the information carriers movable by the transporting device.

30. A method as defined in claim 27; and further comprising providing in the further transporting device a revolving transporting band provided with holes through which the information carriers are acted upon by a vacuum to hold the information carriers on the transporting band.

31. A method as defined in claim 30; and further comprising moving by the transporting band the information carrier with a small distance from an active side of an associated processing unit for printing.

32. A method as defined in claim 27; and further comprising releasing information carriers from guides of the transporting device for transfer to the further transporting device, lifting the information carriers at least insignificantly, and transferring to a transporting band of the further transporting device.

33. A method as defined in claim 26; and further comprising at least insignificantly moving the information carriers downwardly for transferring back to the transporting device, inserting the information carriers into the guides, and then taking the information carriers the information carriers by drivers of the transporting device.

34. A method as defined in claim 27; and further comprising at least insignificantly moving the information carriers downwardly for transferring back to the transporting device, inserting the information carriers into guides, and then taking the information carriers by drivers of the transporting device.

35. A method of producing information carriers, comprising the steps of forwarding the information carriers by at least one transporting device; moving the information carriers to a processing unit for printing on a surface of the information carriers; measuring a speed of the information carriers during the movement along the processing unit for printing.

36. A method of producing information carriers, comprising the steps of forwarding the information carriers by at least one transporting device; moving the information carriers to a processing unit for processing of a surface of the information carriers; determining a position of the information carriers by at least one position sensor during a movement along the processing unit for printing.

37. A method as defined in claim 35; and further comprising controlling the at least one processing unit for printing in correspondence with a measured speed of the information carriers together with an information of the position sensor.

38. A method as defined in claim 36; and further comprising controlling the at least one processing unit for printing in correspondence with a measured speed of the information carriers together with an information of the position sensor.

39. A method as defined in claim 35; and further comprising determining a speed of the information carrier by direct contactless sensing of the information carriers in immediate vicinity to the processing unit for printing.

40. A method as defined in claim 36; and further comprising determining a speed of the information carrier by direct contactless sensing of the information carriers in immediate vicinity to the processing unit for printing.

41. A method as defined in claim 35; and further comprising using a differential Doppler principle for determining a speed of the information carriers.

42. A method as defined in claim 36; and further comprising using a differential Doppler principle for determining a speed of the information carriers.

43. A method as defined in claim 35; and further comprising determining the speed of the information carriers by at least one rotary sensor driven by a further transporting device.

44. A method as defined in claim 36; and further comprising determining a speed of the information carriers by at least one rotary sensor driven by a further transporting device.

45. A method as defined in claim 35; and further comprising providing a speed determination of the information carriers as a processing stage associated with printing.

46. A method as defined in claim 36; and further comprising providing a speed determination of the information carriers as a processing stage associated with printing.

47. A method as defined in claim 35; and further comprising moving information carriers during movement by a further transporting device through the processing unit for printing to an additional processing unit for determining a speed.

48. A method as defined in claim 36; and further comprising moving information carriers during movement by a further transporting device through the processing unit for printing to an additional processing unit for determining a speed.

49. A method as defined in claim 35; and further comprising using for determining a speed of the information carriers a processing unit which is located near or before printing heads.

50. A method as defined in claim 36; and further comprising using for determining a speed of the information carriers a processing unit which is located near or before printing heads.

51. A method of producing information carriers, comprising forwarding the information carriers by at least one transporting device; moving the information carriers to a processing unit for processing on a surface of the information carriers; and, after printing of the information carriers with ink, advancing the information carriers to at least one processing unit for drying or hardening of ink.

52. A method as defined in claim 51; and further comprising the drying or hardening ink by an action selected from the group consisting of UV radiation, electron radiation, and thermal treatment.

53. An apparatus for producing information carriers, comprising at least one transporting device for forwarding the information carriers; and processing means for processing on a surface of the information carriers, said processing means being means selected from the group consisting of a processing unit for treating a surface of the information carriers for increasing wettability of ink, at least one processing unit for printing with ink in accordance with a DoD process, and at least one processing unit for drying or hardening the ink, and combinations thereof.

54. An apparatus as defined in claim 53, wherein said at least one processing unit for treating is arranged along a transporting path of the information carriers before said at least one processing unit for printing.

55. An apparatus as defined in claim 53, wherein said at least one processing unit for drying or hardening is arranged along a transporting path of the information carriers after said at least one processing unit for printing.

56. An apparatus as defined in claim 53, wherein said at least one processing unit for printing includes at least one printing head formed as a DoD printing head.

57. An apparatus as defined in claim 53; and further comprising at least one processing unit for determining a speed of the information carriers in accordance with a differential Doppler principle, said processing unit for determining the speed being associated with said at least one processing unit for printing.

58. An apparatus as defined in claim 57, wherein said at least one processing unit for determining the speed is arranged near or before a printing head of said processing unit for printing.

59. An apparatus as defined in claim 53, wherein said transporting device has at least one-sided guides formed as longitudinal grooves for displaceably guiding the information carriers at their both sides of extending substantially parallel to a transporting direction.

60. An apparatus as defined in claim 59, wherein said transporting device is formed as a device selected from the group consisting of a band and a transporting chain and running between said guides and underneath a transporting plane of the information carriers.

61. An apparatus as defined in claim 53, wherein in a region of the at least one processing unit for printing, a further transporting device associated with said processing unit for printing is arranged, said further transporting device taking the information carriers before reaching the at least one processing unit for printing with release from the first mentioned transporting device and said guides, transporting the information carriers, and after passing the at least one processing unit for printing again transferring the information carriers to the transporting device and said guides.

62. An apparatus as defined in claim 61, wherein said further transporting device has a transporting band provided with throughgoing holes through which vacuum acts on the information carriers located on the transporting band and thereby holds the information carriers on the transporting band.

63. An apparatus as defined in claim 62, wherein the transporting band has an upper side which are spaced above a guiding plane of the guides and longitudinal grooves.

64. An apparatus as defined in claim 65, wherein longitudinal grooves of the guides end at a distance from a beginning of the transporting band or are open above, and the information carriers are released at a side of their edges, and in a region of an end of the transporting band the longitudinal grooves continue; and further comprising directing elements associated with the longitudinal grooves and located at an upper side for guiding the information carriers into the longitudinal grooves.

65. An apparatus as defined in claim 62; and further comprising means for driving the transporting band with the speed which is greater than the speed of a chain.

66. An apparatus as defined in claim 62; and further comprising means for driving the transporting band with the speed which is 5% greater than the speed of the transporting chain.